

GENERAL HEADQUARTERS
SUPREMACY COMMANDER FOR THE ALLIED POWERS
Public Health and Welfare Section

NUTRITION NOTES:

The table gives the nutrients obtained from the weights of food indicated and shows the general effect of varying certain foods. The following points are evident:

a. The grain products supply the largest proportion of energy calories and practically no vitamin A or C.

b. Calcium in the original dietary come chiefly from the cereals, and vegetables.

c. Iron is derived particularly from the cereals, and vegetables.

d. Vitamin A is of two forms (i.) carotene from the vegetables, sweet potatoes and leafy green and yellow; (ii.) true vitamin A of which there is very little, and from the fish.

e. Vitamin B comes chiefly from polished rice, sweet potatoes and legumes, or soy beans. In the case with the exception of the legumes the amount in each case is related to the fact that a rather large amount of the food is eaten in each case.

f. Vitamin B₂ or riboflavin is obtained in small amounts from a number of foods.

g. Niacin is in greatest amount in the polished rice, legumes and fish.

h. Ascorbic acid or vitamin C comes from potatoes, leafy green and yellow and other vegetables.

For the particular dietary with polished rice the total calories is fairly good, protein is fair, calcium, iron, and all the vitamins are low except vitamin A and C.

The total quantity of nutrients represented by the foods other than the grain products and potatoes, and with polished rice and potatoes, is low, or borderline in all nutrients except vitamins A and C. The calories are fairly low for a sedentary man.

The group of foods other than rice and potatoes supply a half or more of the total essential vitamins present in the dietary.

The effect of substituting 70% polished rice for polished or white

rice is to improve the dietary particularly with regard to vitamin B and iron. If 85% extraction wheat flour is used in place of the polished rice there is an improvement in protein vitamin B₁. Doubling the quantity of leafy green and yellow vegetables made small improvements in a number of nutrients and particularly calcium.

The use of 130 grams of leafy green and yellow vegetables and 200 grams of sweet potatoes increases all nutrients, especially if the 85% wheat flour is substituted in place of the rice. Such a dietary is still low in calcium although it is beginning to approach a minimum value, and riboflavin or vitamin C.

The Japanese dietary tends to be low in these two nutrients and vitamin B, when polished rice is consumed. The quantity of calcium is increased by the use of fish bones, such as in sardines when eaten wholly, and dried fish when the bone is eaten. Calcium salts are also used in making tofu, and there may be other ways with which I am not acquainted. Apparently many dietaries contain fairly good amounts of riboflavin because the evidences of riboflavin deficiency, while excellent, are not great in comparison with other parts of the world.

The important points brought out in our discussion of the dietary are:

a. The success of a dietary rests in both the foods that supply calories and the low calory foods.

b. The whole grain products and those only lightly purified carry sufficient of the vitamin B complex, especially thiamine, to assure their utilisation of the carbohydrates. When a large proportion of the outer covering of the grain is removed the quantity of the B vitamins removed with it is sufficient to reduce the vitamin B₁ content to such a point that the dietary is inadequate in the necessary vitamins for the utilisation of the carbohydrates. Furthermore the supplementary foods available now and often in the Japanese dietary do not compensate for these losses. It is desirable to use unpurified foods as much as possible to assure a dietary suitable for health, especially when feed is short.

c. The foods available at this time of year, leafy green and yellow vegetables, and other fruits and vegetables when used in fairly good quantities with the lightly polished rice or milled wheat, give a rather healthy dietary, even though the caloric content may be a little low.

d. There are many ways to attain a healthful dietary. It is important to choose wisely.

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We eat food for many purposes - to furnish energy, to keep us warm, to rebuild worn out tissues and to keep our bodies normal. Different types of substances are present in food and are required for these purposes. They are called nutrients. Foods vary in the kinds and amounts of nutrients they contain. Some foods are important for certain nutrients and not for others. Foods low in certain nutrients are sometimes eaten in such large amounts that they supply a large proportion of the total nutrients required each day.

The most important nutrients are proteins, fat, carbohydrate, minerals, including calcium phosphorus and iron, vitamins, including vitamins A, B₁, B₂ and water. If this diet is made of natural foods and contains sufficient amounts of these nutrients the other vitamins and minerals are usually present in sufficient amount.

Protein: Protein is an important constituent of muscle, milk and all tissues. It is built of units called amino acids. Ten of these amino acids must be supplied directly in food because, while plants can make them, our bodies cannot do so. Protein is necessary for the formation of muscle and other organs of growing children, of milk in women and for the maintenance of the muscles and other organs of adults. While protein is part of muscle the protein of muscle is not broken down in direct relation to work so that extra protein is not required for extra work.

Fat and carbohydrate are sources of energy for body activity and maintenance of body temperature. The bulk of our energy is obtained from carbohydrates. Some fats like fish liver oils, contain fat-soluble vitamins such as vitamins A and D.

Only a little fat is absolutely necessary and that is contained in lightly milled grains, green vegetables, fish and meats. Fats are useful in cooking by making food attractive. The body makes fat from carbohydrates.

The chief carbohydrates are starches and sugars. Starch is changed in the body into sugar, then sugar is not essential except for very small babies who cannot digest starch readily, and some special medical cases. There is sugar in milk. We like sugar because of its flavor and it is useful in cooking to make food attractive, but it is not necessary for a good diet.

Many mineral elements are required by the body - calcium, phosphorus, iron, salt and water are needed in sufficient quantities to require special attention.

Calcium is an important constituent of bones and teeth and takes part in the clotting of blood and many other body activities. It is obtained from milk, fish bones and other bones, leaves of vegetables, seaweeds, beans and lightly milled grain products. At present there is hardly enough milk for very small babies and nursing mothers hence the Japanese must obtain their calcium from the other sources such as fish bones and leafy vegetables in order that the mothers and babies may have what they need.

Phosphorus is also part of bones and teeth, muscle, tissue and certain fatty substances in the body. Phosphorus is contained in the outer coating of grains, lightly milled grain products, beans and meats.

Iron is in many parts of the body and especially in the red coloring matter of the blood, as hemoglobin, where it is concerned in carrying oxygen from the lungs to the rest of the body. Oxygen aids in the production of calories from the oxidation or burning of carbohydrates for work and to keep up the body temperature.

Salt is in all parts of the body. It helps to keep the body processes normal.

Water is in all parts of the body, as part of the blood it helps to carry the food nutrients and blood corpuscles with their oxygen to parts where they are needed. Water also helps to carry the waste products for excretion. Water is very useful in hot weather because it helps to cool the body when it evaporates.

Vitamins are necessary in a variety of body activities. We know most about them when they are not present in the food in sufficient quantities. When Vitamin B₁ is absent, we have beri beri. When vitamin C is low, the gums thicken, the teeth may become loose and wounds do not heal readily. When vitamin A is not present in sufficient quantities, it is difficult to see in the dark and the skin may become rough.

It is important that our food contain sufficient vitamins each day. There are many vitamins and many of them occur together in food. Even when there are symptoms showing the lack of one vitamin, other vitamins are usually missing from the diet, but the symptoms have not appeared. It is therefore important to get our vitamins from foods so that all the vitamins may be obtained.

